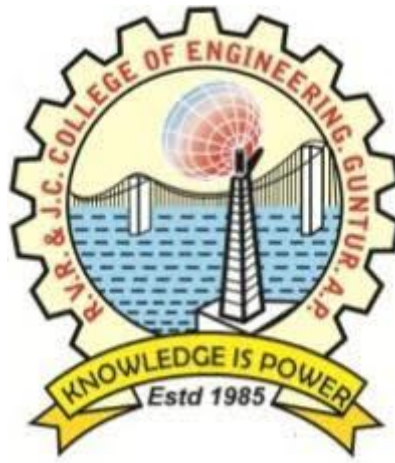# 7.1.4 WATER CONSERVATION FACILITIES AVAILABLE IN THE INSTITUTION

ADDITIONAL INFORMATION

R.V.R & J.C College of Engineering (Autonomous)

Accredited by NBA and NAAC with 'A' Grade

Affiliated to Acharya Nagarjuna University, Guntur, Approved by AICTE

Chandramoulipuram, Chowdavaram, GUNTUR-522019, A.P.

Note Submitted to the Secretary & Correspondent R.V.R.&.J.C. College of Engineering

It is submitted that a detailed survey has been conducted within the campus for planning the effective usage of rainwater through various methods. The detailed report on works to be taken up, locations, quantities and cost has been submitted herewith for approval. Necessary instruction may be given to the concerned for implementation of the woks before monsoon.

(Dr.P.Ch.Sanjeeva Rao)

Professor in Civil Engineering

Rain Water Harvesting plan for RVR&JC College of Engineering, Chowdavaram:

A) Pits:

1. All pits must be dug to a depth touching gravel layer
2. Minimum depth is 1.2m
3. Bottom of the pit is to fill with 40 mm metal or equivalent size brick bat or any other rubbish. Depth of this layer depends on gravel depth at that point.
4. Above the 40mm metal layer 15 to 20 cm 12 mm metal is to be laid.
5. Top 20 to 30 cm is to fillup with sand
6. Top 30 to 40 cm depth must be left unfilled
7. All four sides must be provided with a course of brick work as collar.

B) Trenches:

1. Depth of each trench is 1.2m
2. Length of each trench is 5m
3. A gap of 1m must be left between two trenches
4. Broken turf must be kept atleast 1m away or carted to a suitable point for further use.

C) Rock fill dams

1. 3/4 th cross section of the channel are is proposed to pack with boulders/brick bats with open joints.
2. Section shape is trapezoidal
3. Bottom width of the section is 2m
4. Top width of the section is 0.5m
5. The channel must be deepened and widened along the upstream side.

D) Check dam: The existing check dam storage area may be considered for widening and deepening.

E) Use of Check dam water trough filtration

F) Reuse of Canteen effluents for recharge of ground water

G) Direct collection of canteen roof top rain water

Location of pits:

1. North East corner of SJB block opposite ground - adjacent to the bore well
   :Size of pit area: 6x3m
2. Between Shed no 8 and 11 – 2 meters away from the road
   : Size of pit area: 2x4m
3. North western corner of library:
   : Size of pit area: 3x4m
4. West side of shed no 11
   : Size of pit area: 4x4m

ocation of trenches:

1. Western boundary of road (running north south) present between sheds and western boundary wall;
   Length : 200m
2. Southern side of cyber block;
   Length: 20m

ock fill dams location;

1. Drain running along the southern boundary of cricket ground. 4 numbers of such structures are proposed along this channel.

Bill of quantities:A.) Percolation pits

S.No		Dimensions m	Volume m^3
1	NEcorner of SJB block	6x3x1.5	27
2	Between Shed no 8 and 11	2x4x1.5	12
3	NW corner of library	3x4x1.5	18
4	West side of shed no 11	4x4x1.5	24
		Total ::	81

i)

s. no	Item name	Quantity m^3	Unit cost (Rs.)	Total cost (Rs.)
1	sand	11	1000	11000
2	12mm metal	8	525	4200
3	40mm metal	46	740	34040
			Total cost	49240.00

ii) Excavation cost : 81 m^3 =8hrsX975 =Rs.7800.00

iii) Labor cost : Lump sum Rs.8000.00

iv) Mason work : Rs.5000.00

Total is Rs. 49240+7800+8000+5000= 70,000.00

B) Trenches:

1. Volume of earth work of trench along the western road: 5x1.2x1x 30 nos= 180 m^3

2. Volume of earth work of trench south of Cyber block:30x1x1.2 = 36m^3

Total cost of earth work for 216 m^3@ = Cost of work is 12hrs @925 = 11,100.00

C) Rock fill dams

i) Rock fill materials1.5x1x3x 4 nos = 18 m³ @600 = 10800.00

ii) Earth work : 5x2x 4 nos= 40 m³@   = 4hrs@925 = 3700.00

iii) Labour : Lumpsum Rs.4000.00

Total Rs: 18,500.00

D) Check dam desilting

Lump sum amount proposed is Rs.50,000.00

E) Water filter for check dam

s. no	Item name	Quantity	Unit cost	Total cost
1	1.5 hp pump	1		20,000.00
2	1.25"pipeline	200m	120	24,000.00
3	Electrical works	L.S		2,000.00
4	Filter earth work	30 m³	6 *925	5610.00
5	Filter materials	Sand 5 m³	1000	5000.00
6		12mm- 20 m³	525	10500.00
7	Labour			2000.00
8	Mason work			3000.00
			Total cost	72,110.00

F) Canteen waste water reuse facility:

s. no	Item name	Quantity	Unit cost	Total cost
1	1.5 hp pump	1		15,000.00
2	1.25"pipeline	100m	120	12,000.00
3	Electrical works	L.S		2,000.00
4	Earth work	20 m³	5*925	4625.00
5	6' pipe line	40'	140	5600.00
6	Labour		Ls	2000.00
7	Percolation trench earth work	60m³	6*925	5550.00
			Total cost	51775.00

G) Canteen roof top water direct collection

i) pipe line 6" for 80'length:: 80x@140= 11,200.00

ii) Earth work :: Lump sum Rs.2000.00

Total cost: Rs.13200.00

Abstract

Cost:

s. no	Item name	Quantity	Total cost
1	Percolation pits	4 nos	70,000.00
2	Trenches	216 m³	11,100.00
3	Rock fill dams	4 nos	18,500.00
4	Check dam desilting	1	50,000.00
5	Water filter for check dam water	1	72,110.00
6	Canteen waste water recycle	1	51,775.00
7	Canteen rooftop collection	1	13,200.00
		Total	2,86,685.00

Materials:

S.No	Item name	Quantity	Cost/unit Rs.	Total Cost Rs.
1	Sand	16m³	1000	16000
2	12mm metal	28 m³	525	14700
3	40mm metal	46 m³	740	34040
4	pebbles	18 m³	600	10800
5	Earth work by machine	41hrs	925	37925
6	Labour	LS		18000
7	6" pvc pipe	120'	140	16800
8	Masonry	LS		8000
9	Electrical work	LS		4000
10	Desilting of check dam	LS		50000
11	Pumps	2	20000	40000
12	1.25 pvc line	300m	125	36000
				2, ,86,685.00

- Cost variations may be +/_ 10% of the estimates

- Use of Brick bat/ construction waste/ SM lab broken specimens may reduce the cost of the work